

What is claimed is:

1. Nucleic acid fragment, characterized in that it consists of at least one portion of the *gag* gene of an endogenous retrovirus associated with an autoimmune disease, or with unsuccessful pregnancy or pathological conditions of pregnancy, said portion being chosen from SEQ ID NO. 2 and any series of contiguous nucleotides belonging to SEQ ID NO. 2 but not belonging to SEQ ID NO. 1 and encoding an expression product, or the sequence complementary to said fragment.

2. Fragment according to claim 1, characterized in that it can be isolated from at least one of human chromosomes 1, 3, 6, 7 and 16.

3. Fragment according to claim 2, characterized in that it can be isolated from at least chromosome 3.

4. Fragment according to claim 1, characterized in that the expression product is messenger RNA.

5. Fragment according to claim 1, characterized in that the expression product is immunologically recognized by antibodies present in a biological sample from a patient suffering from an autoimmune disease.

6. Fragment according to claim 5, characterized in that the autoimmune disease is multiple sclerosis.

7. Transcription product which can be obtained by transcription of at least said portion of the *gag* gene of a fragment according to claim 1.

8. Method for detecting, in a biological sample, nucleotide sequences which are integrated into the DNA of the human genome and which belong to the *gag* gene of an endogenous retrovirus associated with an autoimmune disease, or with unsuccessful pregnancy or pathological conditions of pregnancy, characterized in that:

- a prior step of extraction of the cellular DNA of said biological sample is carried out, and then at least one cycle of amplification of the cellular DNA is carried out,
- a given probe, which hybridizes with a said nucleotide sequence and forms a hybridization complex, is brought into contact, under conditions suitable for the hybridization, with the cellular DNA present in the sample, said probe comprising at least 15 contiguous nucleotides of SEQ ID NO. 3, and

- the hybridization complexes formed are detected by any suitable means.

9. Method according to claim 8, characterized in that the probe is labeled with a tracer.

10. Method for detecting, in a biological sample, nucleotide sequences which are integrated into the DNA of the human genome and which belong to the gag gene of an endogenous retrovirus associated with an autoimmune disease, or with unsuccessful pregnancy or pathological conditions of pregnancy, characterized in that:

- a prior step of extraction of the cellular DNA of said biological sample, optionally derived from isolated chromosomes, is carried out, and then at least one cycle of amplification of the cellular DNA is carried out,
- a step of in vitro transcription/translation of the amplified product is carried out, and
- the product derived from the transcription/translation step is reacted with a serum or plasma from a patient with an autoimmune disease.

11. Method according to claim 8, characterized in that the biological sample is a biological fluid chosen from serum, plasma, synovial fluid and urine.

12. Method for studying and/or monitoring T-cell proliferation in vitro, according to which the T cells from a patient are brought into contact with synthetic peptides belonging to SEQ ID NO. 31.

13. Method for the in situ molecular labeling of chromosomes isolated from patients, in which a probe labeled with any suitable tracer, and comprising at least 15 contiguous monomers of SEQ ID NO. 3, is used.

14. Recombinant protein obtained using an expression cassette in a bacterial host, characterized in that its protein sequence consists of SEQ ID NO. 31.

15. Protein according to claim 14, characterized in that the bacterial host is *E. coli*.

16. Reagent for detecting, in a biological sample, an autoimmune disease or monitoring pregnancy, comprising at least one fragment according to claim 1.

17. The method according to claim 10, wherein said endogenous retrovirus is associated with an autoimmune disease.

18. The method according to claim 17, wherein said autoimmune disease is multiple sclerosis.

19. Method according to claim 10, characterized in that the biological sample is a biological fluid chosen from serum, plasma, synovial fluid and urine.

20. Method for studying and/or monitoring T-cell proliferation in vitro, according to which the T cells from a patient are brought into contact with transcription/translation products as obtained according to the method of claim 19.

21. Reagent for detecting, in a biological sample, an autoimmune disease or monitoring pregnancy, comprising at least one transcription/translation product as obtained according to the method of claim 19.

22. Reagent for detecting, in a biological sample, an autoimmune disease or monitoring pregnancy, comprising at least one synthetic peptide belonging to SEQ ID NO: 31.

23. Reagent for detecting, in a biological sample, an autoimmune disease or monitoring pregnancy, comprising at least one protein according to claim 14.

24. A method for detecting susceptibility to an autoimmune disease or monitoring pregnancy of a patient, comprising bringing a biological sample of said patient into contact with at least one fragment according to claim 1.

25. The method of claim 24, wherein said autoimmune disease is multiple sclerosis.

26. A method for detecting susceptibility to an autoimmune disease or monitoring pregnancy of a patient, comprising bringing a biological sample of said patient into contact with at least one transcription/translation product as obtained according to the method of claim 19.

27. The method of claim 26, wherein said autoimmune disease is multiple sclerosis.

28. A method for detecting susceptibility to an autoimmune disease or monitoring pregnancy of a patient, comprising bringing a biological sample of said patient into contact with at least one synthetic peptide belonging to SEQ ID NO: 31.

29. The method of claim 28, wherein said autoimmune disease is multiple sclerosis.

30. A method for detecting susceptibility to an autoimmune disease or monitoring pregnancy of a patient, comprising bringing a biological sample of said patient into contact with at least one protein according to claim 14.

31. The method of claim 30, wherein said autoimmune disease is multiple sclerosis.

32. The method according to claim 8, wherein said amplification is carried out by PCR using primers selected from the group consisting of SEQ ID NO: 4 to SEQ ID NO: 9 and SEQ ID NO: 12 to SEQ ID NO: 17.

33. The method according to claim 8, wherein said probe comprises at least 17 contiguous nucleotides of SEQ ID NO: 3.
34. The method according to claim 8, wherein said probe comprises at least 19 contiguous nucleotides of SEQ ID NO: 3.
35. The method according to claim 8, wherein said conditions suitable for hybridization are conditions of high stringency.
36. The method according to claim 10, wherein said amplification is carried out by PCR using primers selected from the group consisting of SEQ ID NO: 4 to SEQ ID NO: 9 and SEQ ID NO: 12 to SEQ ID NO: 17.
37. The nucleic acid fragment according to claim 1, wherein said endogenous retrovirus is associated with an autoimmune disease.
38. The nucleic acid fragment according to claim 37, wherein said autoimmune disease is multiple sclerosis.
39. The transcription product according to claim 7, wherein said endogenous retrovirus is associated with an autoimmune disease.
40. The transcription product according to claim 39, wherein said autoimmune disease is multiple sclerosis.
41. The method according to claim 8, wherein said endogenous retrovirus is associated with an autoimmune disease.
42. The method according to claim 41, wherein said autoimmune disease is multiple sclerosis.
43. The method according to claim 9, wherein said tracer is a radioactive tracer or an enzyme.